

8. ECOLOGY AND ENVIRONMENT

(1 X 2) + (1 X 4) + (1 X 8) = 14 Marks

ROOT POINTS

1. Environment is the major factor for the evolution and continuation of life.
2. Ecology is the study of environment and its habitants.
3. Living being cannot survive without energy.
4. Solar energy is the primary source of energy for all the living forms either directly or indirectly.
5. Capture and storing of energy by chlorophyll is the major step in evolution.
6. Ozone is beneficial when it is in the outer layer of atmosphere. It protects the life from UV rays of Sun. It is dangerous when it is close to the earth.
7. Pollutants are there since the beginning of earth, but they are balanced by non-pollutants.
8. Man is solely responsible for fitting the balance towards pollutants and may be responsible for his own extinction unless remedial steps are taken.
9. UV rays kill micro organisms. UV rays convert the sterols in the skin to vitamin D. [IPE]
10. Mutualism is a type of interaction between different species in which both are benefited.
Ex: Bees and flowering plant. [IPE]
11. **Summer Stratification:** During summer in temperate lakes, the formation of three layers of water is called Summer stratification. [IPE]
12. DFC is detritus food chain. It is an important food chain in terrestrial ecosystem. [IPE]
Detritus is formed from leaf litter, dead bodies, and faeces of animals.
13. **Green house effect:** 'Green house effect' is a naturally occurring phenomenon, [IPE]
that is responsible for heating of the Earth's surface and atmosphere.
14. **Global Warming:** Rise of temperature above normal level in the atmosphere is called [IPE]
global warming. This happens due to the increase in the emission of green house gases.

15. Lake Ecosystem zones: (I) Littoral zone (II) Limnetic zone (III) Profundal zone. [IPE]

16. Food chains of Ecosystem: [IPE]

1) Grazing food chain 2) Parasite food chain 3) Detritus food chain

17. Major air pollutants: [IPE]

1) Carbonmonoxide 2) Carbondioxide 3) Sulphurdioxide
4) Nitrogen oxides 5) Aerosols 6) Noise pollution.

FRUITY Qs OF IPE

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1. What is an ecosystem?
2. Distinguish the terms phototaxis and photokinesis.
3. What are circadian rhythms?
4. Mention the advantages of some UV rays to us.
5. Define mutualism. Give one example.
6. What is summer stratification? Explain.
7. Compare the adaptations of animals with freshwater and seawater mode of life.
8. What are the deleterious effects of depletion of ozone in the stratosphere?
9. Describe Green House Effect.
10. Discuss the causes and effects of global warming. What measures need to be taken to control 'Global Warming'?
11. Describe lake as an ecosystem by giving examples for the various zones and the biotic components in it.
12. Describe different types of food chains that exist in an ecosystem.
13. List out the major air pollutants and describe their effects on human beings.

11. Give an account of flow of energy in an ecosystem.

[AP M-15]

A: Flow of energy in an ecosystem:

- 1) Sun is the only source of energy for all the ecosystems on earth.
- 2) Solar energy captured by plants passes through different organisms of an ecosystem.
- 3) Less than 50% of incidental solar energy is Photosynthetically Active Radiation(PAR).
- 4) Plants capture only 2 to 10% of PAR, which sustains the entire living world.
- 5) All heterotrophs are dependent on the producers for their food, either directly or indirectly.
- 6) The first of law of thermodynamics is the 'law of conservation of energy'.

It states that, energy is neither created nor destroyed. It may change from one form to the other.

Energy that reaches earth is balanced by the energy that leaves as heat radiation.

Transfer of energy is essential for survival of life. It needs continuous flow of energy.

- 7) Second law of thermodynamics states that there is degradation of energy at each level.

The degraded energy is in the form unavailable heat energy.

It constitutes entropy i.e., energy not available for work.

The transfer of energy through a food chain is known as energy flow.

The amount of energy available decreases at successive trophic levels.

- 8) When an organism dies, it becomes a source of energy for its decomposers.
- 9) Each trophic level has a certain mass of living material and it is called the standing crop.
The standing crop is the biomass. Biomass can be expressed in terms of fresh weight or dry weight. Dry weight is more accurate.

10) The 10% law: It was introduced by Linderman.

It says that, during transfer of energy, only 10% of energy is stored in a trophic level and remaining energy is used for metabolic activities like respiration.

Linderman's 10% rule is most widely used measure of ecological efficiency.

Ex: If the net primary production of plant is 100kJ, the biomass available for herbivores is 10kJ.

Next carnivores gets only 1kJ.

